

THE INVENTION CLAIMED IS:

1. A grease removal system comprising:
  - a) a grease trap tank having outer walls and a bottom connected to the outer walls;
  - b) an inlet through an outer wall of the grease trap tank, wherein the inlet has a center and a lower end;
  - c) an outlet through an outer wall of the grease trap tank, wherein the outlet has a center and a lower end;
  - d) an outlet grease baffle positioned between the inlet and the outlet extending downwardly across the tank to an elevation spaced from the tank bottom defining a passageway therethrough to permit effluent having a specific gravity greater than grease to pass but to retain and accumulate grease on the surface of the effluent within the grease trap tank, wherein the outlet grease baffle defines a grease chamber within the tank between the inlet and the outlet grease baffle; and
  - e) a discharge portal having a center and a lower end extending through the grease trap tank outer wall in the grease chamber to the outside of the grease trap tank, wherein the lower end of the discharge portal is above the lower end of both the inlet and outlet to permit removal of liquid grease from the surface of the effluent passing through the grease trap.
2. The system according to claim 1, further including an entrance baffle positioned proximate to the inlet to the grease trap tank to direct fluid entering the grease trap tank toward the bottom of the tank.

3. The system according to claim 1, further including a screen filter between the inlet and the grease trap tank to remove solids.

4. The system according to claim 1, further including at least one heater to heat the effluent and retain the grease in a liquid state.

5. The system according to claim 1, further including a replaceable container adjacent to the grease trap tank, wherein the discharge portal extends into and directs grease into the replaceable container.

6. The system according to claim 5, wherein the discharge portal is connected to a valve such that at a predetermined level the valve may be opened to transfer the grease into the replaceable container.

7. The system according to claim 6, further including a scale supporting the replaceable container and a sensor such that when the weight of the grease bag meets or exceeds a certain value, the valve is closed and the grease trap tank pump is stopped.

8. The system according to claim 6, further including a quick connect coupling between the discharge portal and the replaceable container to promote ease in connecting and disconnecting the discharge portal to the replaceable container.

9. The system according to claim 6, further including a grease trap tank pump connected to the valve to assist in transferring grease into the replaceable container.

10. The system according to claim 1, further including a secondary tank adjacent to the grease tank, wherein the secondary tank retains an enzyme solution and wherein the discharge portal directs grease into the secondary tank such that the enzyme solution may act upon and decompose the grease therein.

11. The system according to claim 10, further including a metering pump to introduce the enzyme solution within the secondary tank in a controlled fashion.

12. The system according to claim 10, wherein the discharge portal is a spillway such that when grease accumulates on the effluent to a sufficient thickness, the grease will proceed to pass over the spillway into the secondary tank.

13. The system according to claim 12, further including a secondary tank pump connecting an outlet from the secondary tank to the grease trap tank inlet, such that effluent may be recirculated from the secondary tank back to the grease trap tank.

14. The system according to claim 13, wherein the secondary tank pump is positioned to draw fluid from the bottom of the secondary tank.

15. The system according to claim 10, wherein the discharge portal is connected to a valve and a grease trap tank pump such that at a predetermined level the valve may be opened and the grease trap tank pump activated to transfer the grease into the secondary tank.

16. The system according to claim 15, further including a secondary tank pump connecting an outlet from the secondary tank to the grease trap tank inlet, such that effluent may be recirculated from the secondary tank back to the grease trap tank.

17. The system according to claim 16, wherein the secondary tank pump is positioned to draw fluid from the bottom of the secondary tank.

18. The system according to claim 1, further including an intermediate grease baffle between the inlet and the outlet grease baffle, wherein the intermediate grease baffle extends downwardly across the tank to an elevation spaced from the tank bottom, at least one solids baffle extending upwardly from the tank bottom and located adjacent to the intermediate grease baffle to provide a channel with a torturous path between the inlet and the outlet.

19. The system according to claim 18, wherein there is one solids baffle spaced on each side of the intermediate grease baffle.

20. The system according to claim 19, wherein each of the two solids baffles is equally spaced on opposite sides of the intermediate grease baffle, thereby providing a first solids baffle and a second solids baffle.

21. The system according to claim 20, wherein the height of each solids baffle is equal.

22. The system according to claim 18, wherein the intermediate grease baffle is spaced from the inlet side of the grease trap tank by a distance equal to between  $\frac{1}{2}$  -  $\frac{3}{4}$  length of the grease trap tank.

23. The system according to claim 18, wherein the channel formed by the at least one solids baffle and the intermediate grease baffle has a cross-sectional area that is approximately equal throughout the passageway.

24. The system according to claim 23, wherein the intermediate grease baffle height is approximately between  $\frac{1}{20}$  and  $\frac{1}{4}$  of the height of the grease trap tank.

25. The system according to claim 23, wherein the at least one solids baffle has a height of less than  $\frac{1}{4}$  the height of the grease trap tank.

26. The system according to claim 23, wherein the grease baffle channel at the bottom of the intermediate grease baffle has the same height as the height of the at least one solids baffle.

27. A method of removing grease from an effluent comprising the steps of:

- a) providing:
  - 1) a grease trap tank having outer walls and a bottom connected to the outer walls;
  - 2) an inlet through an outer wall of the grease trap tank, wherein the inlet has a center and a lower end; and

3) an outlet through an outer wall of the grease trap tank, wherein the outlet has a center and a lower end;

- b) introducing effluent laden with grease into the grease trap;
- c) separating a substantial portion of the grease from the effluent by allowing the grease to float upon the other effluent; and
- d) discharging grease that rests upon and above the other effluent by allowing the grease to flow from the tank at a certain level; and
- e) directing the discharged grease through a discharge portal and out of the grease trap tank.

28. The method according to claim 27, wherein the step of directing the discharged grease through a discharge portal involves the step of directing the discharged grease into a replaceable container adjacent to the grease trap tank.

29. The method according to claim 28, wherein the steps of discharging grease that rests upon and above the water and directing the discharged grease through a portal is accomplished by opening a valve to allow grease to enter the discharge portal and then pumping the grease into the replaceable container.

30. The method according to claim 27, wherein the step of directing the discharged grease through a discharge portal involves the step of directing the discharged grease into a secondary tank adjacent to the grease trap tank, wherein the secondary tank retains an enzyme solution that acts upon and decomposes the grease therein.

31. The method according to claim 30, wherein the enzyme solution is metered into the secondary tank.

32. The method according to claim 30, wherein the discharge portal is a spillway and the step of discharging grease that rests upon and above the other effluent by allowing it to flow from the tank at a certain level is accomplished by allowing the grease to accumulate and flow over the spillway and into the secondary tank.

33. The method according to claim 30, wherein the steps of discharging grease that rests upon and above the other effluent and directing the discharged grease through a portal is accomplished by opening a valve to allow grease to enter the discharge portal and then pumping the grease into the secondary tank having an enzyme solution therein.

34. The method according to claim 33, further including the step of heating the effluent within the grease trap tank to retain the grease in a liquid state.

35. A grease removal system for removing grease from a grease trap tank comprising:

- a) a grease trap tank wherein grease is accumulated upon the surface of other effluent within the tank;

- b) a discharge portal extending from the grease trap tank at a certain level on the tank to extract the accumulated grease;

- c) a replaceable container for collecting the grease extracted from the grease trap tank, wherein the grease bag has an inlet; and

d) a quick connect coupling between the discharge portal and the replaceable container inlet for ease in removal or installation of the discharge portal with the replaceable container.

36. The grease removal system according to claim 35, wherein the quick connect coupling is a spring-loaded female portion that is matable with an indent in a male portion, wherein the spring engages the indent to secure the portions together.

37. A grease removal system comprising:

a) a grease trap tank having outer walls and a bottom connected to the outer walls;

b) an inlet through an outer wall of the grease trap tank, wherein the inlet has a center and a lower end;

c) an outlet through an outer wall of the grease trap tank, wherein the outlet has a center and a lower end;

d) an outlet grease baffle positioned between the inlet and the outlet extending downwardly across the tank to an elevation spaced from the tank bottom to permit effluent having a specific gravity greater than grease to pass but to retain and accumulate grease on the surface of the other effluent within the grease trap tank, wherein the grease baffle defines a grease chamber within the tank between the inlet and the grease baffle;

e) a discharge portal having a center and a lower end extending through the grease trap tank outer wall in the grease chamber to the outside of the grease trap, wherein the lower end of the discharge portal is below the lower end of both the inlet and

outlet to permit removal of liquid grease from the surface of the effluent passing through the grease trap, wherein the discharge portal has a valve therein; and

f) a first level sensor positioned below the discharge portal, wherein the first level sensor is capable of sensing a layer of grease upon the effluent, such that when such a layer is detected, the valve in the discharge portal is opened and grease is removed from the grease trap tank until the first level sensor no longer detects a layer of grease.

38. The system according to claim 37, wherein the first level sensor is a capacitive sensor.

39. The system according to claim 37, wherein the first level sensor is an optical sensor.

40. The system according to claim 37, further including a grease trap tank pump associated with the discharge portal and activated at the same time the valve is opened to remove grease from the grease trap tank.

41. The system according to claim 40, further including a replaceable container attached to the discharge portal wherein grease removed through the discharge portal is deposited within the replaceable container.

42. The system according to claim 41, further including a scale associated with the replaceable container, wherein when the replaceable container reaches a

predetermined weight, the valve closes and no more grease is able to pass through the discharge portal.

43. The system according to claim 37, wherein the first level sensor is positioned at a height of between about 90-100% of the height between the bottom of the tank and the lower end of the inlet.

44. The system according to claim 43, further including a second level sensor positioned below the first level sensor, wherein the second level sensor is capable of sensing a layer of grease upon the effluent, such that when such a layer is detected, an alarm mode is initiated.

45. The system according to claim 44, wherein the second level sensor is positioned at a height of about between 60-80% of the height between the bottom of the tank and the lower end of the inlet.

46. The system according to claim 44, wherein at least one of the first and second level sensors is a capacitive sensor.

47. The system according to claim 44, further including heaters proximate to the effluent in the grease trap tank to maintain the grease in a liquid state.

48. A method of removing grease from an effluent comprising the steps of:  
a) providing:

- 1) a grease trap tank having outer walls and a bottom connected to the outer walls;
  - 2) an inlet through an outer wall of the grease trap tank, wherein the inlet has a center and a lower end; and
  - 3) an outlet through an outer wall of the grease trap tank, wherein the outlet has a center and a lower end;
- b) introducing effluent laden with grease into the grease trap;
  - c) separating a substantial portion of the grease from the other effluent by allowing the grease to float upon the other effluent;
  - d) allowing the grease to accumulate to a predetermined thickness thereby weighing upon the other effluent in the grease trap tank and depressing the level of the other effluent within the tank;
  - e) when the grease layer reaches a predetermined level, opening a valve to discharge the grease until the grease is removed to below a predetermined level.

49. The method according to claim 48, further including a first level sensor and opening the valve when the grease activates the first sensor.

50. The method according to claim 49, wherein the step of discharging the grease includes discharging the grease into a replaceable container.

51. The method according to claim 50, further including the step of monitoring the level to which the replaceable container is filled and closing the valve when the grease bag has filled up to or beyond that predetermined level.

52. The method according to claim 51, further including a second level sensor below the level of the first level sensor and the step of sensing the level of the grease when the valve is closed and when the grease accumulates to activate the second level sensor, activating an alarm.

53. The method according to claim 49, wherein when the grease is removed from the grease trap tank, the level of other effluent rises to the first level sensor and the valve is closed.